MONTHLY WEATHER REVIEW.

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The MONTHLY WEATHER REVIEW summarizes the current manuscript data received from about 3,500 land stations in the United States and about 1,250 ocean vessels; it also gives the general results of the study of daily weather maps based on telegrams or cablegrams from about 200 North American and 40 European, Asiatic, and oceanic stations.

The hearty interest shown by all observers and correspondents is gratefully recognized.

Acknowledgment is also made of the specific cooperation of the following chiefs of independent, local, or governmental services: R. F. Stupart, Esq., Director of the Meteorological Service of the Dominion of Canada; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Señor Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, General Superintendent of the United States Life-Saving Service; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; Dr. W. N. Shaw, Director of the Meteorological Office, London; Maxwell Hall, Esq., Government Meteorologist, Kingston, Jamaica; Rev. L. Gangoiti, Director of the Meteorological Observatory of Belen College, Habana, Cuba; Señor Luis G. y Carbonell, Director, Meteorological Service of Cuba, Habana, Cuba; Rev. José Algué, S. J., Director of the Phillipine Weather Bureau, Manila; Maj. Gen. M. A. Rykachef, Director of the Physical Central Observatory, St. Petersburg, Russia; Carl Ryder, Director, Danish Meteorological Institute, Copenhagen, Denmark.

As far as practicable the time of the seventy-fifth meridian is used in the text of the MONTHLY WEATHER REVIEW.

Barometric pressures, both at land stations and on ocean vessels, whether station pressures or sea-level pressures, are reduced, or assumed to be reduced, to standard gravity, as well as corrected for all instrumental peculiarities, so that they express pressure in the standard international system of measures, namely, by the height of an equivalent column of mercury at 32° Fahrenheit, under the standard force, i. e., apparent gravity at sea-level and latitude 45°.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

Barometric movements over the Northern Hemisphere were unusually rapid during April, 1909. In the Asiatic area the alternations of high and low pressure were quite regular and the intervals between the crests and troughs averaged, respectively, about five days. During the first decade of the month high barometer and settled fair weather prevailed over west-central Europe. During the second decade and until the closing days of the month, however, there was a rapid succession of barometric disturbances over that region. The Atlantic and Pacific areas also showed a rather uniform succession of high and low pressure.

In the United States the month was marked by periods of unusually low temperature, and at its close the line of freezing weather was traced from the upper Lake region to New Mexico and snow was falling in the upper Lake region and upper Mississippi Valley. From the 5th to the 8th a storm of marked intensity advanced from the southern Plateau to the St. Lawrence Valley, attended by snow in the middle Rocky Mountain districts and by heavy rain from the States of the lower Missouri Valley over the Ohio Valley and the Gulf and Atlantic coast States, and by severe windstorms from the Southwest over the Great Lakes and the Middle Atlantic and New England States. On the 7th the following special forecast was issued:

Several days of comparatively cool weather are indicated for the eastern half of the United States, with frost in the middle and upper Mississippi and Ohio valleys and the Lake region, and thence over the Middle Atlantic and New England States. Frost is also likely to occur in the interior of the Gulf and South Atlantic States.

Following the disturbance of the 5–8th an area of high barometer swept south and east from the British Northwest Territory attended by frost-bearing temperatures that reached the west Gulf States the morning of the 9th and covered the east Gulf and Atlantic States the morning of the 10th. On that date frosts were general in the South, including northwestern Florida, and on the morning of the 11th the minimum reading of 26° was noted at Washington, D. C. The principal storms of the second decade of the month advanced from the middle Rocky Mountain region to the north Atlantic coast from the 11th to the 14th, and from the 17th to the 19th. The storm of the 11–14th was attended by heavy snow in the middle Rocky Mountain districts, by heavy rain in districts east of the Rockies, and was followed by a cool wave that caused frost in central portions of Louisiana and Mississippi. A storm that advanced from the middle Rocky Mountains to the Lake region from the 20th to the 22d was attended by heavy snow and was followed the night of the 22–23d by frost in Colorado. On the 21st a warning of freezing temperature was issued for that section and on the morning of the 23d the temperature fell to 27° at Pueblo and in the Arkansas Valley. The Star-Journal, Pueblo, Colo., of April 23, 1909, comments as follows regarding the frost:

The Weather Bureau predicted the frost more than twenty-four hours ahead and every effort was made to give the warning to the farmers. Almost without exception fruit growers whose crops were endangered heeded the warning of the Weather Bureau and protected every early-blooming fruit tree with plenty of smudge fires and so prevented any loss by frost.

From the 28th to the 30th a storm of exceptional severity advanced from the middle Rocky Mountain region to the Great Lakes, attended by snow in northern districts from the Rocky Mountains to New England, and by heavy rain, high winds, and severe local storms in the central valleys and the Lake region. Following this disturbance a period of unseasonably cold weather set in over the country generally east of the Rocky Mountains.

BOSTON FORECAST DISTRICT.*

[New England.]

Temperature was somewhat below normal in Maine, New Hampshire, and Vermont and slightly above normal in the three southern States. Precipitation was generally above normal, the excess ranging from 1 inch to 2 inches in northern portions to 2 and 3 inches in Rhode Island and Connecticut. Snowfall in measurable amounts was quite general, except in